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THE WATERSHED AS A RESOURCE MANAGEMENT UNIT: A Selected Bibliography

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by

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INTRODUCTION

This bibliography is intended to cover a range of sources focusing upon the utility of the watershed for water management and general planning purposes. Such an evaluation is essential, as planners are more and more frequently faced with the problem of overlapping jurisdictions and responsibilities stemming from an increasing number of planning regions. A familiar problem for the planner is the variability of boundaries of regions established for diverse problems of which education, public health, economic planning, natural resource management are a few examples.

With the importance of achieving co-ordinated and comprehensive planning stated, it becomes imperative that regions designated for planning purposes be critically evaluated on a number of dimensions. Thus, regions should be assessed with regard to their utility in facilitating achievement of the goals or objectives for which they have been established. Therefore, for the watershed, it is appropriate to enquire, at both conceptual and operational levels, as to how adequate it is for water management and planning. In addition, it is important that a given regional system be evaluated in regard to its compatability with other regional systems established for related planning problems. In this context, it may be asked to what extent the watershed complements or conflicts with other regions, be they politically, economically, or socially conceived. This bibliography does not profess to provide a ready answer to the knotty problem of what comprises an optimum planning region. On the other hand, it is hoped that it may help researchers and practising planners to critically evaluate the watershed

in the context of its adequacy for water management, and for its adequacy in relating to other social and economic planning regions.

In terms of organization, the bibliography is comprised of five main sections. Section I provides some introductory and background references concerning water management. In this way, it is hoped that the reader working his way through water resources literature for the first time may be able to put the "watershed question" into perspective relative to other water management issues. Section II presents a range of references which critically assess different aspects of the watershed as a fundamental planning unit. Advantages and disadvantages of the watershed are documented, and arguments developed concerning its relative merits. It is this section in particular which should help individuals to reach an informed and critical judgement concerning the utility of the watershed as a concept in resource management.

The following sections attempt to provide some methodological and empirical insights. Section III focuses upon methodologies and techniques which have been applied in watershed studies. Section IV gives examples of watershed management programmes both in North America and in other countries. In North America, international watershed management is illustrated by examples from the Columbia River, Rio Grande River, and the Great Lakes Basin. National programmes are illustrated by interstate development and management schemes, notably the Colorado River. Moving outside North America, international examples are represented by the Mekong River, while illustrations of national programmes are drawn from

countries ranging from New Zealand to Europe to Africa. In addition, some specific watershed programmes, such as forestry experiments in river basins and multiple use projects, are presented. It is suggested that references in these sections should help in deciding the operational adequacy of the watershed in the face of political and economic constraints. In contrast, Section II is devoted more to the question of the conceptual adequacy of the watershed.

Section V, the final section, is included with the thought that it represents a situation particularly challenging to the traditional concept of the watershed as a management unit. With the prospects of large-scale inter-state and international water transfers, especially in North America, it becomes interesting to speculate upon the role of the watershed as it has been known to the present. In North America, for example, the implications of large schemes such as N.A.W.A.P.A. bear serious attention from those interested in the role of the watershed in regional planning and development. Again, the selections in this section cannot provide ready answers to the many questions such issues raise - but the readings suggest some alternatives and problems deserving consideration.

In conclusion, it should be noted that the references upon which this bibliography are based should be considered representative rather than exhaustive. There are many references not included here, but it is felt that those included should provide an opportunity for critical assessment of the watershed. In this regard, it is also appropriate to note that the references have been drawn largely from publications issued between 1960 and 1971.

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